Exploring the Interface of Environmental Activism and Digital Surveillance

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The topic of this paper is the emergent issue of surveillance of environmental activists through new and social media, as interests that potentially threaten the 'security of the state'. The latter is a frame that emerged post–9/11 to revise surveillance of criminal activities to also include the activities of social movements, including environmental activists. Following a background on environmental activism and surveillance, we find new and social media in contexts that enable both environmental activism and digital surveillance. In regard to the latter, we explore the concept of 'ecoterrorism', which frames certain understandings of environmental activism as acts of terrorism. We then briefly refer to recent cases of digital surveillance of environmental campaigners in Canada, Pennsylvania, and Australia. Finally, we investigate the extent to which digital surveillance may influence the protest activities of environmental activists, and how environmental activists (and everyday citizens) respond to surveillance. Summing up, we reflect first on the potential of digital surveillance to curb environmental activism with its aim to protect the environment and move towards strong sustainability and green economies; and second, on the potential of environmental activism to resist or manage surveillance.

Keywords*: New and social media; online surveillance; environmental activism; ecoterrorism*

Introduction

The 'security of the state' is a seemingly growing but rather opaque frame of States that emerged post–9/11 to justify and/or inform the

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monitoring of a range of terrorist activities. Along with their expansion to new categories of claimed terrorism, is, for example, the category of social movements including environmental activism. Online surveillance also emerged in complementing and expanding traditional forms of surveillance.

International focus on online surveillance is particularly centred on the notion of 'terrorism' (Dauvergne and Lebaron, 2014; Fuchs et al., 2012). However, little scholarly attention has so far been paid to the online surveillance of environmental activists; but this may be because it is still a highly emergent field. It is an important area to investigate as not only does online surveillance raise civil liberties issues, but for environmental activism it potentially acts as a constraint to better addressing global environmental problems (see also Hindmarsh and Calibeo, this volume).

Accordingly, the aim of this paper is to identify and better understand the substance, key issues, and implications of online surveillance for environmental activism. It is informed by two themes: (i) *the interface of environmental activism and new and social media*, and (ii) *the interface of surveillance and ecoterrorism*, with subthemes of surveillance of environmental activists, and of participatory surveillance. These themes, in utilising the thematic analytical approach of Owen (1994), were discerned from a wide range of sources with relevance to the fields of environmental politics; science, technology and society studies (STS); and new media studies. In addition, grey literature such as 'networks' of blogs, as new forms of new and social media databases and archives, and other websites, were drawn on.

The interface of environmental activism and new and social media

Typically, environmental activists are found in the environmental movement, which is described as a 'loose, noninstitutionalised network of informal interactions' that includes individuals and organisations at 'varying degrees of formality … engaged in collective action motivated by shared identity of concern about environmental issues' (Rootes, 2007, p. 610). Activism is typically referred to as 'sustained collective action with a political purpose' (Dauvergne and Lebaron, 2014, p. 7). Environmental activism can thus be described as 2purposeful and effortful engagement in behaviours aimed at preserving or improving the quality of the environment, and increasing public awareness of environmental issues' (Fielding, McDonald and Winnifred, 2008, p. 319).

This engagement may occur through a range of behaviours, including 'protesting, rallying, petitioning, educating the public, lobbying government and corporations, participating in direct actions such as blockades or participating in voluntary conservation or revegetation work' (Fielding, McDonald and Winnifred, 2008, p. 319; also O'Brien, 2013, p. 2). These behaviours are now often informed by the use of new and social media; however, it is difficult to clearly discern digital and non–digital aspects of environmental activism as they often complement each other. For instance, Gerbaudo (2012) observed that social media has been recently and successfully used by activists as a means to organise and coordinate mobilisation in social uprisings, including the 2011 Occupy Wall Street movement. However, Gerbaudo (2012) also highlighted that new and social media complement face–to–face interaction, which is crucial for social movements to gain larger support.

In the STS literature, digital technologies are conceptualised as complex and globalizing sociotechnological systems (Berkhout, Smith and Stirling, 2004; Fuchs, 2010; Meijer et al., 2006). Such systems are understood as the 'interplay of humans, organizations, and technical systems', highlighting the interconnections between technological innovation and society (Dalpiaz, Giorgini and Mylopoulos, 2011, p. 1). Sociotechnological systems thus constitute the interface between technological and social infrastructures–social arrangements, practices, relationships, values, and behaviours); in other words, they are an important part of human organisation (Star, 1999; also Miller, Sarewitz and Light, 2008).

At this interface, citizens routinely connect with dispersed people otherwise not encountered in 'increasingly homogeneous immediate communities' (Wojcieszak, Baek and Delli Carpini, 2009, p. 1093). Citizens apply public dialogue on new and social media through publishing opinions, reviewing, challenging, and pressuring organisations and institutions. These actions enable broader civic participation in environmental decision making (e.g. Zavestovski, Shulman and Schlosberg, 2005), as new conduits of environmental activism (Leeder, 2007; Lester and Hutchins, 2009).

In the environmental activism arena, new and social media are most often used in relation to protests, chronic technological disasters (Kera, Rod and Peterova, 2013; Muralidharan, Dillistone and Shin, 2011; van Laer and van Aeist, 2010), old growth forest campaigns (Lester and Hutchins, 2009), and anti–consumerist campaigns (Micheletti and Stolle 2008). This use of new and social media readily aligns to democratically–informed participatory movements on environment and technoscience that have

steadily emerged over the last three decades (Beck, 1998; Hindmarsh and Matthews, 2008).

A notable social media environmental mobilisation occurred in response to BP's 2010 Gulf of Mexico oil disaster (Anderson, 2014; Hindmarsh and Calibeo, this volume). Among other things, this action prominently aired the company's long historical record of 'bypassing safety measures and environmental laws' (Muralidharan, Dillistone and Shin, 2011, p. 226). However, while environmental and anti–BP groups grew and were highly active on new and social media through Facebook, Twitter, and blogs (Anderson 2014; Bennett, Segerberg and Walker, 2014; Muralidharan, Dillistone and Shin, 2011), questions remain on the extent that the online protest activities impacted 'on policy and fundamentally changed attitudes towards oil drilling' (Anderson, 2014, p. 126).

In addition, potential of new and social media for change is challenged by privacy violations, concentration of media ownership, and digital surveillance. The focus of this paper is then on digital surveillance, which has particularly gained critical attention in potentially affecting social movements, Internet users, and society as a whole (Andrejevic, 2014; Fuchs et al., 2012; Morozov, 2011). So, what extent does surveillance challenge digital environmental activism in the context of online surveillance and so–called ecoterrorism?

The interface of surveillance and ecoterrorism

Surveillance is generally understood as the process of watching a suspect person or place (Lyon, 2007). We also refer to surveillance in relation to 'fighting' crime or terrorism in regard to the frame of the 'security of the State', and to actions described as acts of 'ecoterrorism' (Lyon, 2007; van Rest et al., 2014). Environmental activists appear to be a suspect social movement 'category' at the forefront of state surveillance since the environmental movement surfaced in the 1970s (Christoff, 1996; Loadenthal, 2013; Potter, 2011).

Ecoterrorism initially was adopted to describe the so–called 'radical environmental movement' and 'hard core' direct actions (Leader and Probst, 2004, p. 44; also Ackerman, 2003). Such actions, often located at the periphery of environmental movements, were common in the early phase of environmentalism from the late 1970s to the early 1990s. However, they lessened as environmentalism became increasingly mainstreamed (Dunlap and Mertig, 2013; Hutton and Connors, 1999).

Notable direct actions aimed to protect whales and other wildlife on the high seas by Greenpeace and Sea Shepherd; to protect old growth forests from logging by (US) Earth First (Button, John and Brearley, 2002; Leader and Probst, 2004); and to shut down nuclear power stations and biological warfare research and animal testing facilities (Potter, 2011; Walby and Monaghan, 2011). Earth First and the Animal Liberation Front were 'believed responsible for some 600 criminal acts between 1996 and 2002 and some [US]$43 million in damages' (Leader and Probst, 2004, p. 37).In response , by the mid–1990s, 'the FBI in the US and Scotland Yard in the UK were 'monitoring the actions of certain eco–terrorist groups' (Eagan, 1996, p. 14; also Walby and Monaghan, 2011).

Infiltration was a traditional surveillance practice to place undercover officers among environmental groups. For example, at the 1992 Twyford Down protest in the UK 'police and security services infiltrated direct action groups delaying road developments leading to the seizure of the last major occupied tunnel' (Welsh, 2007, p. 366). Surveillance agencies also share intelligence information with private interests, a practice that has raised issues of government accountability (Button, John and Brearley, 2002).

By the 1990s, ecoterrorism had become increasingly institutionalised as a state category for surveillance (Taylor, 1998; Wadman, 1999). In 1998, US Congressman Frank Riggs held a 'Hearing on Ecoterrorism'. According to Taylor (1998, p. 26), it featured a list of witnesses 'stacked with some of the most vocal adversaries of radical environmental and animal liberation movements'. Further hearings on ecoterrorism were planned for the US Senate by Senator Orin Hatch (Taylor, 1998, p. 26)

Post–9/11, the 'Global War on Terrorism' was launched by the Bush administration. Subsequently, the US started to aggressively prosecute 'misdemeanour acts of criminality', including vandalism, theft, trespassing and arson, and to reimage them 'as federally prosecutable acts of terrorism' (Loadenthal, 2013, p. 94; also Button, John and Brearley, 2002; Joosse, 2012). Intensive surveillance operations were further legitimised in the US with the 2001 Patriot Act, which allowed court orders to investigate the activities of social movements if the FBI considered them relevant (Joosse, 2012; Vanderheiden, 2005).

By the late 2000s, the ecoterrorism frame seemed to have become widely accepted by state and private interests, which furthered the idea that so–called 'radical environmentalists' were 'terrorists', who by their actions invited more surveillance (Smith, 2009, p. 564). According to Potter (2011, p. 672), surveillance measures included 'sweeping legislation, grand–jury witch hunts, blacklists, and FBI harassment'. Overall, Potter (2011, p. 673) claimed

that the rhetoric of 'terrorism' was used 'to push a political agenda, instil fear, and chill dissent' (see also Ellefsen and Larsen, 2012; Salter, 2011; Walby and Monaghan, 2011).

In turn, with the rise of new and social media, surveillance began online; for example, through 'data mining', a practice aimed at the 'collection, extraction and analysis of large sets of data by software designed for the purpose', including data from social networks like Twitter and Facebook (Harvey 2014, p. 26; see also Han, Kamber and Pei, 2011). Data mining also included collecting information on metadata (literally data about data), to create connections and associations among collected data.

Governmental surveillance through data mining – or metadata regimes – started in the US in the early 2000s. In 2004, the Washington Times (2004, p. 1) reported that US government agencies were 'collecting and sifting through massive amounts of personal information, including credit reports, credit–card purchases and other financial data, posing new privacy concerns'. France, Germany, and Australia followed thereafter in legislating metadata retention schemes (Bingemann, 2015).

Digital surveillance strategies, along with the traditional targeted surveillance practices such as infiltration of undercover officers among protest groups, have been used recently to identify and monitor the activities of environmental activists in the protest arena related to oil drilling.

Surveillance of environmental activists and participatory surveillance

In 2010, environmental protests began in Pennsylvania to oppose the Marcellus shale gas project. Citizens raised environmental concerns about dumping polluted wastewater from shale gas mining into rivers, often used as catchments for human water consumption (Howarth, Ingraffea and Engelder, 2011; Matz and Renfrew, 2015). Due to a local OHS intelligence bulletin being mistakenly emailed to a Pennsylvanian citizen opposing the project, protestors became aware that police were monitoring them. As later revealed, the US Office of Homeland Security (OHS) hired a private contractor to obtain information on planned anti–drilling actions (Wilber, 2012); with the identities of activists also passed onto business interests (Harwood, 2010).

Similarly, in 2011, environmental activists opposing the Keystone XL pipeline being laid across North America and Canada were placed under surveillance. TransCanada, the Keystone owner, claimed to local authorities

that activists and local landowners opposing the pipeline were threatening economic state security (Arnsdorf, 2015; Leahy, 2013). Accordingly, in 2011, the police placed Canadian citizens opposing the project under surveillance, as 'threats to national security' (Leahy, 2013, p. 1; also Chisholm and Uechi, 2014). Notably, in late 2013, the Canadian government issued a procurement document for 24/7 monitoring and analysis of social media content, which included 'blogs, micro–blogs, social networking sites including Facebook and Twitter, forums and message boards, traditional news websites and comment sections, and media sharing websites' (Rennie, 2013, p. 1).

Online surveillance also began in Australia. Front Line Action on Coal–an environmental group opposing coal mining–established a blockade in 2012 in Liard State Forest in New South Wales. A 2012 investigation by Australian media revealed that both the State government and the mining industry were monitoring environmental activists through 'state and territory law enforcement agencies', also through 'open source' material: websites and social media (Allard, 2014, p. 2). The mining companies operating in the area (Idemitsu and Whitehaven Coal) also admitted to having hired private security firms to infiltrate undercover officers among environmental activists (Dorling, 2012; Farrell, 2014).

In turn, the investigation also disclosed governmental involvement in surveillance actions. For example, Martin Ferguson (of the Labor Party and the Resources and Energy Minister of Australia in 2009) had requested more surveillance measures to assist energy companies and the police to manage 'the increasing risk of disruptions' during mining operations (Dorling, 2012, p. 1; also Allard, 2014).

These cases illustrate that governments and the corporate sector are engaging, and often collaborating, in surveillance operations of environmental activists, where traditional offline surveillance strategies and online surveillance ones, such as data mining and monitoring of 'open source' material, worked hand–in–hand.

That said, to what extent do such strategies influence the way individuals and activists use new and social media for campaigning? Some scholars argue that these strategies, and more broadly the anti–terror legitimation of online surveillance, has 'heightened sensitivities to surveillance, intensified activist anxieties and produced a climate of fear as well as public insecurity' (Welsh, 2007, p. 365; also Jeffries, 2011).

At the same time, Bingemann (2015, p. 28) has claimed that online surveillance strategies through metadata, for example, are 'ineffective in combatting terrorism', as it remains unclear whether the collection and

perusal of metadata can effectively identify terrorists (also European Commission, 2015). Referring to the 2015 Paris terrorist attacks, Australian Green Party Senator Scott Ludlam argued that there was 'scant evidence' demonstrating success in identifying terrorists through the collection of metadata, because 'It's indiscriminate and by definition harvests vast amounts of useless information on people who aren't persons of interest' (cited in Bingemann, 2015, p. 28). Ludlam also argued, like many others, that traditional targeted surveillance, complemented by social media monitoring, is the most effective surveillance.

In sum, the three cases above illustrate that new and social media can provide additional or alternative conduits for governments and corporations to exert surveillance on environmental activists, but it still seems that targeted surveillance complemented by social media monitoring is more effective.

Concomitantly, new and social media also provide activists with alternative conduits for communication and protest that sometimes inadvertently also challenge surveillance efforts (Doyle and Fraser, 2010). For example, in late October 2016, environmental activists were protesting the 'Dakota Access Pipeline', a 1200–mile pipeline to transport crude oil from North Dakota to Illinois. On Facebook, a post in the environmental camp suddenly went viral in claiming that the Morton County sheriff's department was using Facebook as an intelligence tool to identify and track activists who checked–in to the protest camp on Facebook, in relation to the Standing Rock site (Rogers, 2016).

In response, Facebook users worldwide were asked by the campaign to 'check in at Standing Rock to overwhelm and confuse' police agencies, and to share the message on their profiles (Levin and Woolf, 2016; Skalicky and Davey, 2016). More than one million people responded in showing a willingness to challenge police surveillance and show solidarity to the protesters' cause (Levin and Woolf, 2016; Rogers, 2016; Shoichet, 2016). Such actions, as suggested by Doyle and Fraser (2010, p. 226), reflect that online surveillance can be 'surprisingly ineffective when confronted with the horizontal, self–organized power of online social networks', or 'many–to–many' communication (see also Hindmarsh and Calibeo, this volume).

Interestingly, in another reaction to being watched, Krueger (2005) observed that some users tended to increase their activities in challenging surveillance; for example, by participating more actively in online debates, as well as in social action. For instance, in the Pennsylvanian case discussed above, the FBI bulletin on surveillance of anti–drilling citizens was widely

disseminated online, informed news media and, empowered anti–drilling organisations to settle surveillance litigation with the state in 2015 (Cusick, 2015). In addition, there is the rise of new encryption technologies that many social media platforms are now providing.

Thus, even though new and social media provide surveillance agencies with a new tool to exert surveillance, it appears that, due to a number of reasons–such as horizontal communication, encryption technologies, the flexible structures of new and social media and the environmental movement–that digital surveillance is by itself ineffective, and that it is more effective when coupled to traditional surveillance.

Conclusions

To reiterate, the aim of this paper was to identify and better understand the interfaces of new and social media, environmental activism, and digital surveillance. Accordingly, we found the following.

First, the interface of environmental activism and new and social media, where social media are used as relatively new vehicles for communication by environmental activists, also enables alternative or complementary conduits for digital surveillance of activists; as shown in the cases of Pennsylvania, Canada, and Australia.

In such conduits, surveillance in its digital form, as in the traditional form, is contextualised by notions of state security, where the frame of 'ecoterrorism' appears to be making an extension from criminal areas to everyday activities of protest, and to 'whole–of–population' online surveillance. Such extension then positions all new and social media users as potential 'digital suspects', which raises questions about human rights in relation to increasingly mainstreamed forms of digital communication. Thus, associated issues of technology, civil liberties, and human rights are becoming more prominent in the critique of new and social media.

Overall, the effectiveness of digital surveillance as standalone surveillance is questioned. Difficulties for digital surveillance in democratic societies will very likely grow in the future with increasing public awareness and reacting user pressure on new and social media and/or telephone companies, and governments, in regard to privacy and surveillance issues. This is due, for instance, in regard to emergent mass encryption technologies sold in relation to privacy issues, and adopted by activists to avoid online surveillance; as demonstrated in the Standing Rock Facebook check–in case, and by the horizontal communication structure of new and social media.

In sum, several evidences strongly question whether digital surveillance by itself can pose an effective constraint to environmental activism. But, this situation appears to change when it used as a surveillance technique to inform traditional or targeted surveillance. Nevertheless, questions about, and the implications of, online surveillance of environmental activism, and, of course, of other social movements and citizens in general, remain. They invite broad public scrutiny and input about the substance, design, purpose, transparency, accountability, and legitimacy, of digital surveillance.

Reference list

Ackerman, G. (2003) Beyond Arson: A Threat Assessment of the Earth Liberation Front. *Terrorism and Political Violence*, 15 (4), 143–170.

Allard, T. (2014) Coal Spies: The Secret World of Black Ops. *The Age*, June 7th. [Online] Available from: http://goo.gl/1dlS2q [Accessed: October 28th, 2016].

Anderson, A. (2014) *Media, Environment And The Network Society*. Basingstoke: Palgrave Macmillan.

Andrejevic, M. (2014) WikiLeaks, Surveillance, and Transparency. *International Journal of Communication*, 8 (1), 2619–2630.

Arnsdorf, I. (2015) Big Oil's Fight for Keystone XL Includes Tracking Critics, Activists. *The Seattle Times*, February 24th. [Online] Available from: http://goo.gl/r8GwgB. [Accessed: October 16th, 2016].

Beck, U. (1998) Politics of Risk Society. In Franklin, J. (ed.), *The Politics of Risk Society*. Polity Press: Cambridge.

Bennett, L., Segerberg, A. and Walker, S. (2014) Organization in the crowd: Peer production in large–scale networked protests. *Information, Communication and Society*, 17 (2), 232–260.

Berkhout, F., Smith, A. and Stirling, A. (2004) Socio–technological Regimes and Transition Contexts. In Elzen, B. (ed.), *System Innovation and the Transition to Sustainability: Theory, Evidence and Policy.* Edward Elgar: Cheltenham.

Bingemann, M. (2015) Call to Ditch 'Overkill' Data Retention Laws after Paris. *The Weekend Australian*, November 21st. [Online] Available from: http://goo.gl/xbstMq [Accessed: October 30th, 2016].

Button, M., John, T. and Brearley, N. (2002) New Challenges in Public Order Policing: The Professionalisation of Environmental Protest and the Emergence of the Militant Environmental Activist. *International Journal of the Sociology of Law*, 30 (1), 17–32.

Chisholm, M. and Uechi, J. (2013) CSIS Spying on Citizens at Alarming Rate, FOIs Reveal. *Vancouver Observer*, February 26th. [Online] Available from: http://tinyurl.com/p2xgrez [Accessed: August 27th, 2016].

Christoff, P. (1996) Ecological Citizens and Ecologically Guided Democracy. In Doherty, B. and DeGeus, M. (eds.), *Democracy and Green Political Thought: Sustainability, Rights, and suspects*. New York: Routledge.

Cusick, M. (2015) Anti–drilling Group Settles Surveillance Litigation with State. *State Impact*, January 22nd. [Online] Available from: http://n.pr/2dCLXPo [Accessed: March 8th, 2017].

Dalpiaz, F., Giorgini, P. and Mylopoulos, J. (2013) Adaptive Socio–technical Systems: A Requirements–based Approach. *Requirements Engineering*, 18 (1), 1–24.

Dauvergne, P. and Lebaron, G. (2014) *Protest Inc.: The Corporatization of Activism*. Cambridge: Polity Press.

Dobson, A., and Sáiz, A. (2005) Environmental Politics: Introduction. *Environmental Politics*, 14 (2), 157–162.

Dorling, P. (2012) Spies Eye Green Protesters. *The Age*, January 7th. [Online] Available from: http://goo.gl/Wv6aoe [Accessed: March 8th, 2017].

Doyle, T., and McEachern, G. (2008) *Environment and Politics*. New York: Routledge.

Doyle, W., and Fraser, M. (2010) Facebook, Surveillance, and Power. In Wittkower, D. (ed.), *Facebook and Philosophy: What's on Your Mind?* Chicago: Open Court.

Dunlap, R. and Mertig, A. (eds.) (2013) *American Environmentalism: The US Environmental Movement, 1970–1990*. New York: Routledge.

Eagan, S. (1996) From Spikes to Bombs: The Rise of Ecoterrorism. *Studies in Conflict and Terrorism*, 19 (1), 1–18.

Ellefsen, S. and Larsen, G. (2012) *Eco Global Crimes: Contemporary Problems and Future Challenges*. Farnham: Ashgate.

European Commission (2015*) Study on Paving the Way for Future Policy Initiatives in the Field of Fight Against Organised Crime: The Effectiveness of Specific Criminal Law Measures Targeting Organised Crime*. Luxembourg: Publication Office of the European Union.

Farrell, P. (2014) Maules Creek Surveillance of Activists May Have Breached Licensing Laws. *The Guardian*, June 12th. [Online] Available from: https://goo.gl/LAr2kv [Accessed: March 8th, 2017].

Fielding, K., McDonald, R. and Winnifred, R. (2008) Theory of Planned Behaviour, Identity and Intentions to Engage in Environmental Activism. *Journal of Environmental Psychology*, 28 (4), 318–326.

Fuchs, C. (2010) StudiVZ: Social Networking in the Surveillance Society. *Ethics and Information Technology*, 12 (2), 171–185.

Fuchs, C., Boersma, K., Albrechtslund, A. and Sandoval, M. (2012) *Internet and Surveillance: The Challenges of Web 2.0 and Social Media*. New York: Routledge.

Gerbaudo, P. (2012). *Tweets and The Streets: Social Media and Contemporary Activism*. London: Pluto Press.

Han, J., Kamber, M. and Pei, J. (2012) *Data Mining: Concepts and Techniques*. Waltham: Elsevier.

Harvey, K. (2014) *Encyclopaedia of Social Media and Politics*. Thousand Oaks: Sage.

Harwood, M. (2010) Trickle Down Surveillance. *Reason.com*, October 5th. [Online] Available from: http://tinyurl.com/3axn4fq [Accessed: March 8th, 2017].

Hindmarsh, R., and Calibeo, D. (2017) The Potential of New and Social Media for Environmental Activism, in this volume.

Hindmarsh, R. and Matthews, C. (2008) Deliberative Speak at the Turbine Face: Community Engagement, Wind Farms, and Renewable Energy Transitions, Australia. *Journal of Environmental Policy and Planning*, 10 (3), 217–232.

Howarth, R., Ingraffea, A., and Engelder, T. (2011) Natural Gas: Should Fracking Stop? *Nature*, 477, 271–275.

Hutton, D. and Connors, L. (1999) *A History of the Australian Environmental Movement*. New York: Cambridge University Press.

Jeffries, F. (2011) Saying Something: The Location of Social Movements in the Surveillance Society. *Social Movement Studies*, 10 (2), 175–190.

Joosse, P. (2012) Elves, Environmentalism, and 'Eco–terror': Leaderless Resistance and Media Coverage of the Earth Liberation Front. *Crime Media and Culture*, 8 (1), 75–93.

Kera, D., Rod, J. and Peterova, R. (2013) Post–apocalyptic Citizenship and Humanitarian Hardware. In Hindmarsh, R. (ed.), *Nuclear Disaster at Fukushima Daiichi: Social, Political and Environmental Issues*. New York: Routledge.

Krueger, B. (2005) Government Surveillance and Political Participation on the Internet. *Social Science Computer Review*, 23 (4), 439–452.

Leader, S. and Probst, P. (2004) The Earth Liberation Front and Environmental Terrorism. *Terrorism and Political Violence*, 15 (4), 37–58.

Leahy, S. (2013) Canada's Environmental Activists Seen as 'Threat to National Security'. *The Guardian*, February 15th. [Online] Available from: http://tinyurl.com/muemau8 [Accessed: March 8th, 2017].

Leeder, K. (2007) Technology and Communication in the Environmental Movement. *Electronic Green Journal*, 1 (25), 1076–7975.

Lester, L. and Hutchins, B. (2009) Power Games: Environmental Protest, News Media and the Internet. *Media, Culture and Society*, 31 (4), 579–595.

Levin, S. and Woolf, N. (2016) Standing Rock: One Million People 'Check in' on Facebook to Support Dakota Pipeline Protesters, *The Guardian*, November 1st. [Online] Available at: http://bit.ly/2et6h3m [Accessed: October 31st, 2016].

Loadenthal, M. (2013) Deconstructing 'Ecoterrorism': Rhetoric, Framing and Statecraft as Seen through the Insight Approach. *Critical Studies on Terrorism*, 6 (1), 92–117.

Lyon, D. (2007) *Surveillance Studies: An Overview*. Cambridge: Polity Press.

Matz, J. and Renfrew, D. (2015) Selling 'Fracking': Energy in Depth and the Marcellus Shale. *Environmental Communication*, 9 (3), 288–306.

Meijer, I., Hekkert, M., Faber, J. and Smiths, R. (2006) Perceived Uncertainties Regarding Socio–technological Transformations: Towards a Framework. *International Journal of Foresight and Innovation Policy*, 2 (2), 214–240.

Micheletti, M. and Stolle, D. (2008) Fashioning Social Justice through Political Consumerism, Capitalism, and the Internet. *Cultural Studies*, 22 (5), 749–769.

Miller C., Sarewitz, D. and Light, A. (2008) Science, Technology, and Sustainability: Building a Research Agenda. *The National Science Foundation*. [Online] Available from http://goo.gl/JDEoh4 [Accessed: November 1st, 2016].

Morozov, E. (2011) *The Net Delusion*. New York: PublicAffairs.

Muralidharan, S., Dillistone, K. and Shin, J–H. (2011) The Gulf Coast Oil Spill: Extending the Theory of Image Restoration Discourse to the Realm of Social Media and beyond Petroleum. *Public Relations Review*, 37 (3), 226–232.

O'Brien, T. (2013) Fragmentation or Evolution? Understanding Change within the New Zealand Environmental Movement. *Journal of Civil Society*, 9 (3), 287–299.

Owen, W. (1984) Interpretive Themes in Relational Communication, *Quarterly Journal of Speech*, 70, 274–287.

Potter, W. (2011) *Green Is the New Red*. San Francisco: City Lights Books.

Rennie, S. (2013) Social Media Monitoring: Feds to Keep Close Eye on Facebook Posts. *Huffington Post*, November 29th. [Online] Available from: http://goo.gl/RvWbXz [Accessed: November 3rd, 2016].

Rogers, K. (2016) Why Your Facebook Friends are Checking in to Standing Rock. *The New York Times*, October 31th. [Online] Available at: http://nyti.ms/2ehp57W. [Accessed: October 31st, 2016].

Rootes, C. (2007) *Environmental Movements*. In Snow D., Soule S. and Kriesi H. (eds.), *The Blackwell Companion to Social Movements*. Malden: Blackwell.

Salter, C. (2011) Activism as Terrorism: The Green Scare, Radical Environmentalism and Governmentality. *Anarchist Developments in Cultural Studies*, 1, 211–238.

Skalicky, S. and Davey, M. (2016) Tension between Police and Standing Rock Protesters Reaches Boiling Point. *The New York Times*, October 28th. [Online] Available at: http://nyti.ms/2eV95YC [Accessed: October 31st, 2016].

Shoichet, C. (2016) Why your Facebook friends are checking in at Standing Rock. *CNN*, October 31st. [Online] Available at: http://cnn.it/2egfKxg [Accessed: October 31st, 2016].

Smith, T. (2009) The Social Media Revolution. *International Journal of Market Research*, 51 (4), 559–561.

Star, S. (1999) The Ethnography of Infrastructure. *American Behavioral Scientist*, 43 (3), 377–391.

Taylor, B. (1998) Religion, Violence and Radical Environmentalism: From Earth First! to the Unabomber to the Earth Liberation Front. *Terrorism and Political Violence*, 10 (4), 1–42.

Vanderheiden, S. (2005) Eco–terrorism or Justified Resistance? Radical Environmentalism and the 'War on Terror'. *Politics and Society*, 33 (3), 425–447.

van Laer, J. and van Aelst, P. (2010) Internet and Social Movement Action Pepertoires: Opportunities and Limitations. *Information Communication and Society*, 13 (8), 1146–1171.

van Rest, J., Grootjen, F., Grootjen M., Wijn, R., Aarts, O., Roelofs, M.L., Burghouts, G.J., Bouma, H., Alic, L. and Kraaij, W. (2014) Requirements for Multimedia Metadata Schemes in Surveillance Applications for Security. *Multimedia Tools Application*, 70 (1), 573–598.

Wadman, M. (1999) US Senate Gets Tough on Animal Activists. *Nature*, 399 (6735), 397–397.

Walby, K. and Monaghan, J. (2011) Private Eyes and Public Order: Policing and Surveillance in the Suppression of Animal Rights Activists in Canada. *Social Movement Studies*, 10 (1), 21–37.

Washington Times (2004) U.S. Agencies Collect, Examine Personal Data on Americans. *Washington TImes*, May 28th. [Online] Available from: http://tinyurl.com/m89duyj [Accessed: March 8th, 2017].

Welsh, I. (2007) In Defence of Civilisation: Terrorism and Environmental Politics in the 21st Century. *Environmental Politics*, 16 (2), 356–375.

Wilber, T. (2012) *Under the Surface: Fracking, Fortunes, and the Fate of the Marcellus Shale*. New York: Cornell University Press.

Wojcieszak, E., Baek, Y. and Delli Carpini, M. (2009) What is Really Going on? *Information, Communication and Society*, 12 (7), 1080–1102.

Zavestoski, S., Shulman, S. and Schlosberg, D. (2006) Democracy and the Environment on the Internet: Electronic Citizen Participation in Regulatory Rulemaking. *Science, Technology & Human Values*, 31 (4), 383–408.